

Notice of Allowability

Application No.

10/694,522

Examiner

Hai C. Pham

Applicant(s)

KAMIYAMA ET AL.

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE & Amendment filed 09/13/06.
2. ☒ The allowed claim(s) is/are 1-8.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: claims 1 and 6 are patentable over the prior art of record because of the specific configuration of the detection apparatus for detecting droplets discharged from discharge nozzles provided in a discharge head (claim 1) and that of the droplet discharge apparatus comprising said droplet detection apparatus (claim 6), the droplet detection apparatus including a light emitter for emitting detection light, a receiver for receiving said detection light, and a moving device for moving said discharge head in a direction of movement to intersect an optical path of said detection light, wherein said discharge nozzles are all aligned in an alignment direction parallel to said direction of movement of said discharge head, said moving device moves said discharge head, said discharge nozzle aligned in said alignment direction discharge said droplets at a same time and at a predetermined time interval, and wherein the settings are adjusted so as to satisfy the claimed conditions with respect to the diameter of a beam of said detection light, the diameter of said droplets, the distance between the discharge nozzles in the direction of movement of said discharge head, and the relative distance that said discharge head and said detection apparatus move from when a discharge nozzle discharges one droplet to when said discharge nozzle discharges the next droplet, to place only one droplet discharged from each discharge nozzle onto the optical path of said detection light. The combined limitations as current claimed are not taught by the prior art of record considered alone or in combination.

Claim 5 is patentable over the prior art of record because of the specific detecting method for a droplet discharge apparatus having a discharge head with a plurality of discharge nozzles all aligned in a predetermined direction for discharging droplets, the method comprising the steps of emitting a detection light toward a predetermined receiver, moving said discharge head in a direction of movement parallel to said predetermined direction, discharging said droplets from said discharge nozzles at a same time and at a predetermined time interval, detecting the amount of light received by said receiver due to said droplets passing through the optical path of said detection light, and when verifying the discharge state of the discharge nozzles based on the detected result, adjusting settings so as to satisfy the claimed conditions with respect to the diameter of the beam of said detection light, the diameter of said droplets, the distance between the discharge nozzles in the direction of movement of said discharge head, and the distance that said discharge head moves from when a discharge nozzle discharges one droplet to when said discharge nozzle discharges the next droplet, to place only one droplet discharged from each discharge nozzle onto the optical path of said detection light. The combined limitations as current claimed are not taught by the prior art of record considered alone or in combination.

Claim 8 is patentable over the prior art of record because of the specific droplet discharge method comprising a step for discharging droplets from a discharge head with a plurality of discharge nozzles all aligned in a predetermined direction for discharging droplets at a same time and at a predetermined interval, a detection step for detecting whether said droplets are discharged from said discharge nozzles, and a

processing step for performing predetermined processing for said discharge head based on a detection result of said detection step, wherein said detection step, wherein said detection step comprises radiating a detection light toward a predetermined receiver, moving said discharge head in a direction of movement parallel to said predetermined direction, discharging said droplets from said discharge nozzles at a predetermined time interval, detecting the amount of light received in said receiver due to said droplets passing through the optical path of said detection light, and when verifying the discharge state of the discharge nozzles based on the detected result, adjusting settings so as to satisfy the claimed conditions with respect to the diameter of the beam of said detection light, the diameter of said droplets, the distance between the discharge nozzles in the direction of movement of said discharge head, and the distance that said discharge head moves from when a discharge nozzle discharges one droplet to when said discharge nozzle discharges the next droplet, to place only one droplet discharged from each discharge nozzle onto the optical path of said detection light. The combined limitations as current claimed are not taught by the prior art of record considered alone or in combination.

Claims 2-4 and 7 are allowed because they are directly or indirectly dependent from claims 1 and 6 above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HAI PHAM
PRIMARY EXAMINER

September 28, 2006